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Docket No.: YOR920020192US1
20140-00296-US2
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Maria Ronay

Application No.: 10/618,751

Confirmation No.: 6935

Filed: July 15, 2003

Art Unit: 3723

For: POLISHING COMPOSITIONS AND USE
THEREOF

Examiner: M. T. Rachuba

APPEAL BRIEFMS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

As required under § 41.37(a), this brief is filed within two months of the Notice of Appeal filed in this case on February 7, 2006, and is in furtherance of said Notice of Appeal.

The fees required under § 41.20(b)(2) are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief contains items under the following headings as required by 37 C.F.R. § 41.37 and M.P.E.P. § 1206:

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|------|---|
| I. | Real Party In Interest |
| II. | Related Appeals and Interferences |
| III. | Status of Claims |
| IV. | Status of Amendments |
| V. | Summary of Claimed Subject Matter |
| VI. | Grounds of Rejection to be Reviewed on Appeal |

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Application No.: 10/618,751**Docket No.: YOR920020192US1
(20140-00296-US2)**

VII. Argument
VIII. Claims
IX. Evidence
X. Related Proceedings
Appendix A Claims
Appendix B Evidence

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is:

International Business Machines Corporation

II. RELATED APPEALS, INTERFERENCES, AND JUDICIAL PROCEEDINGS

The Board's decision in the Appeal in copending application serial number 10/645,493 may possibly directly affect or be directly affected by or have a bearing on the Board's decision in this appeal. However, no decision has been rendered in that application and there are no appeals, interferences, or judicial proceedings other than in serial number 10/645,493 which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS**A. Total Number of Claims in Application**

There are 22 claims pending in application.

Application No.: 10/618,751**Docket No.: YOR920020192US1
(20140-00296-US2)****B. Current Status of Claims**

1. Claims canceled: 2, 3 and 10-19
2. Claims withdrawn from consideration but not canceled: 0
3. Claims pending: 1, 4-9 and 20-22
4. Claims allowed: 0
5. Claims rejected: 1, 4-9, 20-22

C. Claims On Appeal

The claims on appeal are claims 1, 4-9, 20-22

IV. STATUS OF AMENDMENTS

Applicant did not file an Amendment After Final Rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention is concerned with a method for planarizing a surface which is formed on a substrate. The method, as recited in claim 1, comprises providing on the surface to be planarized a liquid slurry composition comprising abrasive particles and solid lubricant particles. See page 2, lines 14-18 of the specification. The lubricant particles are selected from the group consisting of poly (tetrafluoroethylene), fluoroethylene-propylene copolymers, perfluoroalkoxy resins, polyvinylidene fluoride and mixtures thereof. See page 4, lines 9-11 of the specification. The method further comprises contacting said surface with a polishing pad. See page 2, lines 17-18 of the specification.

According to claim 2, the amount of the solid lubricant particles is about 0.3 to about 10 % by weight. See page 5, line 7 of the specification.

Application No.: 10/618,751

**Docket No.: YOR920020192US1
(20140-00296-US2)**

According to claim 4, the lubricant particles have a coefficient of friction of 0.03 to about 0.3. See page 4, lines 18-19 of the specification.

According to claim 5 the lubricant particles have a particle size of 0.05 to about 18 microns. See page 4, line 20 of the specification.

According to claim 6, the abrasive particles comprise a member selected from the group consisting of ceria, alumina, silica, titania, zirconia, polymer particles, organic/inorganic composite particles, and combinations. See page 5, lines 17-18 of the specification

According to claim 7, the amount of the abrasive particles is about 0.1 to about 20 percent by weight. See page 5, line 21 of the specification

According to claim 8, the slurry is an aqueous slurry. See page 6, line 1 of the specification.

According to claim 9, the composition further comprises a surfactant. See page 5, lines 10-11 of the specification.

According to claim 20, the method is concerned with planarizing a surface which is formed on a substrate. See page 6, lines 27-28 of the specification.

According to claim 21, the surface to be polished is a thin film. See page 2, line 22 of the specification.

According to claim 22, the lubricant particles comprise poly (tetrafluoroethylene). See page 4, lines 12-13 of the specification

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Has the Examiner established that Claims 1, 4, 6, 8 and 20-22 are anticipated by the cited art and namely, US Patent 6,283,829 to Molnar and therefore unpatentable under 35 USC 102(b)?

Application No.: 10/618,751**Docket No.: YOR920020192US1
(20140-00296-US2)**

B. Has the Examiner established that Claims 5 and 7 are obvious over the cited art and namely, US Patent 6,283,829 to Molnar and therefore unpatentable under 35 USC 103(a)?

C. Has the Examiner established that Claim 9 is obvious over the cited art and namely, over U.S. Patent 6,283,829 to Molnar in view of Patent Publication 2003/0211743 to Chang et al. and therefore unpatentable under 35 USC 103(a)?

VII. ARGUMENT

A. Molnar does not anticipate Claims 1, 4, 6, 8 and 20-22

Claims 1, 4, 6, 8 and 20-22 were rejected under 35 USC 102(b) as being anticipated by US Patent 6,283,829 to Molnar.

Molnar fails to anticipate or render obvious the above claims. The present application is concerned with improving the planarizing of surfaces employing an abrasive containing composition. According to the present invention friction that develops during polishing between a polishing pad and a wafer is reduced by incorporating solid lubricant particles in the abrasive containing composition. The present invention makes it possible to increase the topological selectivity of the planarizing/polishing. The present invention also makes possible the reduction of wafer delamination (peeling) due to planarization/polishing, which is particularly important in planarizing conductor lines embedded in low-k (i.e. low dielectric constant) insulators or porous low-k insulators or planarizing the insulators themselves.

Molnar fails to anticipate the present invention since, among other things, Molnar deals with using polishing pads that require abrasive particles contained therein (e.g. fixed abrasive finishing elements). On the other hand, the process of this invention can be practiced and is preferably practiced using pads such as polyurethane pads that do not require abrasive particles. As recited in the present claims, the polishing compositions require the presence of abrasive particles. Molnar relates to fixed abrasive finishing elements which are fundamentally different from the processes of the present invention that require polishing slurries having abrasives contained therein. Along these lines, see US Patent 5,958,794 to Bruxourt (copy previously

Application No.: 10/618,751**Docket No.: YOR920020192US1
(20140-00296-US2)**

submitted in response to office action of December 21, 2004) that discusses differences between fixed abrasive articles as contrasted to having the abrasives in the slurry.

Moreover, Molnar does not anticipate the present claims since Molnar prefers using slurries that are free from abrasive particles, suggests using liquid or solid lubricants and suggests adding the lubricant to the polishing slurry or to the fixed abrasive finishing element. Accordingly, to arrive at the present invention one would have to make specific fortuitous selections among a number of possible combinations.

Molnar fails to anticipate the present invention. In particular, anticipation requires the disclosure, in a prior art reference, of each and every recitation as set forth in the claims. See *Titanium Metals Corp. v. Banner*, 227 USPQ 773 (Fed. Cir. 1985), *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 1 USPQ2d 1081 (Fed. Cir. 1986), and *Akzo N.V. v. U.S. International Trade Commissioner*, 1 USPQ2d 1241 (Fed. Cir. 1986). Each and every claim recitation must be considered. See *Pac-Tec, Inc. v. Amerace Corp.* 14 USPQ2d 1871 (Fed. Cir. 1990) cert denied 502 US808 1991.

There must be no difference between the claimed invention and reference disclosure for an anticipation rejection under 35 U.S.C. 102. See *Scripps Clinic and Research Foundation v. Genetech, Inc.* 18 USPQ2d 1001 (CAFC 1991) and *Studiengesellschaft Kohle GmbH v. Dart Industries*, 220 USPQ 841 (CAFC 1984).

The law is well settled that claiming of a more specific combination within a broader group of possibilities avoids a lack of novelty rejection. The test for anticipation is whether the claims read on the prior art disclosure, not on what the references broadly teach.

For example, see *Akzo N.V. v. U.S. International Trade Commissioner* 1 USPQ2d 1241 (Fed. Cir. 1986). In *Akzo*, the court found that no anticipation exists when one would have had to "randomly pick and choose among a number of different polyamides, a plurality of solvents and a range of inherent viscosities" to reach the claimed invention.

Also see *In re Kollman et al.* 201 USPQ 193 (CCPA-1979) wherein the court held that the prior art generic disclosure contains "no suggestion of the required FENAC/diphenyl ether ratio".

Application No.: 10/618,751**Docket No.: YOR920020192US1
(20140-00296-US2)**

In Rem-Cru Titanium v. Watson 112 USPQ 88 (D.D.C-1956), the prior art showed alloys having broad ranges which included the claimed ranges. However, the prior art did not explicitly disclose the more limited claimed ranges or alloys having the characteristics of the claimed alloy. Accordingly, the court held the claims to be allowable. For a similar factual pattern and same holding, please see *Becket v. Coe* (CA, Dc 1938) 38 USPQ2d and *Tarak v. Watson* (DC-DC 1954) 103 USPQ 78.

B. Molnar fails to render obvious Claims 5 and 7

Claims 5 and 7 were rejected under 35 USC 103(a) as being obvious over US Patent 6,283,829 to Molnar.

Molnar does not render obvious the use of a solid lubricant in the compositions to which the present invention is directed, since Molnar, suggests the use of lubricants in fixed abrasive finishing pad in order to reduce the breaking away of abrasive particles from the fixed abrasive pad (see col. 9, lines 38-41 and col. 30, lines 43-45). Therefore no motivation exists to employ a solid lubricant wherein the abrasive particles are already contained in the polishing composition.

The mere fact that cited art may be modified in the manner suggested by the Examiner does not make this modification obvious, unless the cited art suggest the desirability of the modification. No such suggestion appears in the cited art in this matter. The Examiner's attention is kindly directed to *In re Lee* 61 USPQ2d 1430 (Fed. Cir. 2002), *In re Dembiczak et al.* 50 USPQ2d. 1614 (Fed. Cir. 1999), *In re Gordon*, 221 USPQ 1125 (Fed. Cir. 1984), *In re Laskowski*, 10 USPQ2d. 1397 (Fed. Cir. 1989) and *In re Fritch*, 23, USPQ2d. 1780 (Fed. Cir. 1992).

In *Dembiczak et al.*, supra, the Court at 1617 stated: "Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references. See, e.g., *C.R. Bard, Inc., v. M3 Sys., Inc.*, 157 F.3d. 1340, 1352, 48 USPQ2d. 1225, 1232 (Fed. Cir. 1998) (describing 'teaching or suggestion motivation [to combine]' as in 'essential evidentiary component of an obviousness holding'), *In re Rouffet*, 149 F.3d 1350, 1359, 47 USPQ2d. 1453, 1459 (Fed. Cir. 1998) ('the Board must identify

Application No.: 10/618,751**Docket No.: YOR920020192US1
(20140-00296-US2)**

specifically...the reasons one of ordinary skill in the art would have been motivated to select the references and combine them');...".

Also, the cited art lacks the necessary direction or incentive to those of ordinary skill in the art to render the rejection under 35 USC 103 sustainable. The cited art fails to provide the cited degree of predictability of success of achieving the properties attainable by the present invention needed to sustain a rejection under 35 USC 103. See *Diversitech Corp. v. Century Steps, Inc.* 7 USPQ2d 1315 (Fed. Cir. 1988), *In re Mercier*, 185 USPQ 774 (CCPA 1975) and *In re Naylor*, 152 USPQ 106 (CCPA 1966).

Moreover, the properties of the subject matter and improvements which are inherent in the claimed subject matter and disclosed in the specification are to be considered when evaluating the question of obviousness under 35 USC 103. See *Gillette Co. v. S.C. Johnson & Son, Inc.*, 16 USPQ2d. 1923 (Fed. Cir. 1990), *In re Antonie*, 195, USPQ 6 (CCPA 1977), *In re Estes*, 164 USPQ 519 (CCPA 1970), and *In re Papesch*, 137 USPQ 43 (CCPA 1963).

No property can be ignored in determining patentability and comparing the claimed invention to the cited art. Along these lines, see *In re Papesch*, supra, *In re Burt et al.*, 148 USPQ 548 (CCPA 1966), *In re Ward*, 141 USPQ 227 (CCPA 1964), and *In re Cescon*, 177 USPQ 264 (CCPA 1973).

C. Molnar in view of Chang et al. fail to render obvious Claim 9

Claim 9 was rejected under 35 USC 103(a) as being unpatentable over U.S. Patent 6,283,829 to Molnar in view of Patent Publication 2003/0211743 to Chang et al. Chang et al. was merely relied upon for disclosure of adding a surfactant to a slurry for CMP applications. Chang fails to overcome the above discussed deficiencies of Molnar with respect to rendering unpatentable the present claims. Accordingly, claim 9 is patentable for at least those reasons as to why claim 1 is patentable.

VIII. CLAIMS

A copy of the claims involved in the present appeal is attached hereto as Appendix A. As indicated above, the claims in Appendix A do include the amendments filed by Applicant on April 21, 2005.

Application No.: 10/618,751**Docket No.: YOR920020192US1
(20140-00296-US2)****IX. EVIDENCE**

No evidence pursuant to §§ 1.130, 1.131, or 1.132 or entered by or relied upon by the examiner is being submitted.

X. RELATED PROCEEDINGS

The Board's decision in the Appeal in copending application serial number 10/645,493 may possibly directly affect or be directly affected by or have a bearing on the Board's decision in this appeal. However, no decision has been rendered in that application and therefore copies of decisions in related proceedings are not provided, hence no Appendix C is included.

Dated: 3-22-06

Respectfully submitted,

By 

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Application No.: 10/618,751**Docket No.: YOR920020192US1
(20140-00296-US2)****APPENDIX A****Claims Involved in the Appeal of Application Serial No. 10/618,751**

1. A method for planarizing a surface which is formed on a substrate which comprises providing on the surface to be planarized a liquid slurry composition comprising abrasive particles and solid lubricant particles; wherein the lubricant particles are selected from the group consisting of poly (tetrafluoroethylene), fluoroethylene-propylene copolymers, perfluoroalkoxy resins, polyvinylidene fluoride and mixtures thereof ;
and contacting said surface with a polishing pad.
2. The method of claim 1 wherein the amount of the solid lubricant particles is about 0.3 to about 10 % by weight.
4. The method of claim 1 wherein the lubricant particles have a coefficient of friction of 0.03 to about 0.3.
5. The method of claim 1 wherein the lubricant particles have a particle size of 0.05 to about 18 microns.
6. The method of claim 1 wherein the abrasive particles comprise a member selected from the group consisting of ceria, alumina, silica, titania, zirconia, polymer particles, organic/inorganic composite particles, and combinations.
7. The method of claim 1 wherein the amount of the abrasive particles is about 0.1 to about 20 percent by weight.
8. The method of claim 1 wherein the slurry is an aqueous slurry.
9. The method of claim 1 wherein the composition further comprises a surfactant.

Application No.: 10/618,751**Docket No.: YOR920020192US1
(20140-00296-US2)**

20. A method for planarizing a surface which is formed on a substrate which comprises providing on the surface to planarized a liquid composition comprising abrasive particles and solid lubricant particles; wherein the lubricant particles are selected from the group consisting of poly (tetrafluoroethylene), fluoroethylene-propylene copolymers, perfluoroalkoxy resins, polyvinylidene fluoride and mixtures thereof ; and contacting said surface with a polishing pad.

21. The method of claim 20 wherein the surface to be polished is a thin film.

22. The method of claim 1 wherein the lubricant particles comprise poly (tetrafluoroethylene).

Application No.: 10/618,751

**Docket No.: YOR920020192US1
(20140-00296-US2)**

APPENDIX B

EVIDENCE

A copy of the following Exhibit is attached:

Exhibit A: US Patent 5,958,794 to Bruxvoort et al. entered into record in the Response to Office Action dated December 21, 2004.

Application No.: 10/618,751**Docket No.: YOR920020192US1
(20140-00296-US2)**

**APPENDIX C
RELATED PROCEEDINGS**

The Board's decision in the Appeal in copending application serial number 10/645,493 may possibly directly affect or be directly affected by or have a bearing on the Board's decision in this appeal. However, no decision has been rendered in that application and therefore copies of decisions in related proceedings are not provided.

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